SUPPLEMENTAL MATERIAL

Electrocardiographic ST segment depression and exposure to traffic-related aerosols in elderly subjects with coronary artery disease.

Ralph J. Delfino[1]; Daniel L. Gillen[2]; Thomas Tjoa[1]; Norbert Staimer[1]; Andrea Polidori[3]; Mohammad Arhami[3,4]; Constantinos Sioutas[3]; John Longhurst.[5]

[1] Department of Epidemiology, School of Medicine, University of California, Irvine (UCI), Irvine, CA;

[2] Department of Statistics, School of Information and Computer Sciences, UCI;

[3] Department of Civil and Environmental Engineering, Viterbi School of Engineering, University of Southern California, Los Angeles, CA;

[4] Department of Civil Engineering, Sharif University of Technology, Tehran, Iran;

[5] Susan Samueli Center for Integrative Medicine, and Cardiology Division, Department of Medicine, School of Medicine, UCI;

Supplemental Material, Table 1. Estimated risk of ischemic ST segment depression from exposure to outdoor community air pollutants.

Exposure	Averaging time[a]	OR (95% CI)[b]	RR (95% CI)[c]
Particle number	1-hr	0.83 (0.60, 1.15)	--
	8-hr	0.81 (0.45, 1.44)	--
	1-day	0.74 (0.33, 1.63)	0.81 (0.57, 1.16)
	2-day	0.78 (0.23, 2.59)	0.70 (0.41, 1.20)
	3-day	0.80 (0.25, 2.58)	1.05 (0.44, 2.49)
	4-day	0.91 (0.24, 3.52)	1.09 (0.40, 2.99)
	5-day	1.09 (0.29, 4.05)	1.63 (0.70, 3.80)
	6-day	1.20 (0.22, 6.59)	1.88 (0.58, 6.11)
Black carbon	1-hr	1.21 (1.05, 1.39)[#]	--
	8-hr	1.54 (1.15, 2.06)[#]	--
	1-day	2.07 (1.30, 3.29)[#]	1.55 (1.13, 2.14)[#]
	2-day	2.36 (1.24, 4.52)[#]	1.53 (0.95, 2.47)*
	3-day	2.78 (1.13, 6.84)**	1.99 (1.11, 3.59)**
	4-day	2.17 (0.81, 5.77)	2.27 (1.18, 4.38)**
	5-day	1.40 (0.51, 3.80)	1.58 (0.83, 2.99)
	6-day	0.92 (0.29, 2.93)	0.73 (0.29, 1.83)
Organic Carbon (OC)	1-hr	1.14 (0.68, 1.92)	--
	8-hr	1.17 (0.59, 2.31)	--
	1-day	1.97 (0.71, 5.50)	2.05 (0.91, 4.63)
	2-day	1.72 (0.58, 5.16)	1.33 (0.63, 2.80)
	3-day	1.37 (0.47, 4.02)	1.96 (0.81, 4.71)
	4-day	0.99 (0.29, 3.37)	0.88 (0.33, 2.37)
	5-day	0.72 (0.21, 2.52)	0.76 (0.32, 1.78)
	6-day	0.67 (0.18, 2.47)	0.64 (0.22, 1.87)
Primary OC	1-hr	1.78 (1.14, 2.79)**	--
	8-hr	4.12 (1.76, 9.62)[#]	--
	1-day	11.29 (3.13, 40.64)[#]	2.67 (0.99, 7.20)*
	2-day	15.36 (3.46, 68.23)[#]	2.91 (0.92, 9.19)*
	3-day	6.03 (1.47, 24.76)**	6.37 (1.66, 24.3)[#]
	4-day	3.78 (0.80, 17.88)*	3.24 (0.94, 11.20)*
	5-day	2.70 (0.50, 14.65)	3.56 (1.11, 11.34)**
	6-day	1.85 (0.32, 10.69)	2.44 (0.67, 8.84)

Table 1 (cont)

Exposure	Averaging time[a]	OR (95% CI)[b]	RR (95% CI)[c]
Secondary OC	1-hr	0.86 (0.64, 1.16)	--
	8-hr	0.77 (0.51, 1.16)	--
	1-day	0.70 (0.29, 1.70)	1.14 (0.74, 1.73)
	2-day	0.48 (0.16, 1.48)	0.98 (0.60, 1.60)
	3-day	0.47 (0.13, 1.71)	0.78 (0.45, 1.35)
	4-day	0.31 (0.05, 1.78)	0.48 (0.25, 0.91)**
	5-day	0.24 (0.04, 1.34)	0.23 (0.08, 0.71)**
	6-day	0.25 (0.04, 1.41)	0.19 (0.06, 0.61)[#]
$PM_{2.5}$	1-hr	1.25 (0.94, 1.68)	--
	8-hr	1.56 (1.08, 2.25)**	--
	1-day	2.29 (1.34, 3.92)[#]	1.37 (1.06, 1.77)**
	2-day	2.17 (1.13, 4.14)**	1.50 (0.87, 2.58)
	3-day	1.90 (0.97, 3.72)*	1.59 (1.03, 2.46)**
	4-day	1.59 (0.78, 3.22)	1.35 (0.86, 2.12)
	5-day	1.40 (0.64, 3.06)	0.91 (0.42, 1.97)
	6-day	1.35 (0.52, 3.51)	0.68 (0.25, 1.83)
$PM_{0.25}$	1-day	--	1.17 (0.99, 1.40)*
	2-day	--	1.57 (1.19, 2.06)[#]
$PM_{0.25-2.5}$	1-day	--	1.10 (0.94, 1.29)
	2-day	--	1.17 (0.70, 1.95)
$PM_{2.5-10}$	1-day	--	1.09 (0.92, 1.30)
	2-day	--	1.25 (0.94, 1.67)
NO_2	1-hr	1.18 (0.90, 1.54)	--
	8-hr	1.65 (1.08, 2.52)**	--
	1-day	2.47 (1.27, 4.78)[#]	1.62 (1.09, 2.41)**
	2-day	3.22 (1.26, 8.23)**	1.80 (0.90, 3.62)*
	3-day	3.83 (1.20, 12.16)**	2.63 (0.99, 6.96)*
	4-day	2.68 (0.78, 9.20)	4.04 (1.66, 9.83)[#]
	5-day	1.53 (0.41, 5.64)	2.96 (1.12, 7.85)**
	6-day	0.81 (0.18, 3.58)	1.21 (0.42, 3.45)
NO_x	1-hr	1.17 (0.97, 1.42)	--
	8-hr	1.33 (0.96, 1.86)*	--
	1-day	1.56 (0.88, 2.76)	1.75 (1.10, 2.78)**
	2-day	1.69 (0.76, 3.72)	1.71 (0.90, 3.22)*
	3-day	1.81 (0.57, 5.72)	2.70 (0.85, 8.55)*
	4-day	1.53 (0.33, 7.02)	3.82 (1.19, 12.29)**
	5-day	1.12 (0.18, 6.87)	3.48 (1.07, 11.37)**
	6-day	0.74 (0.09, 6.37)	1.06 (0.15, 7.39)

Table 1 (cont)

Exposure	Averaging time[a]	OR (95% CI)[b]	RR (95% CI)[c]
CO	1-hr	1.28 (1.01, 1.62)**	--
	8-hr	1.57 (1.05, 2.35)**	--
	1-day	2.07 (1.05, 4.08)**	1.67 (1.04, 2.69)**
	2-day	2.22 (1.00, 4.92)*	2.13 (0.80, 5.67)
	3-day	2.43 (1.06, 5.59)**	3.71 (1.04, 13.30)**
	4-day	1.99 (0.77, 5.14)	6.72 (1.76, 25.71)[#]
	5-day	1.53 (0.52, 4.49)	4.62 (1.73, 12.32)[#]
	6-day	0.74 (0.15, 3.57)	0.39 (0.14, 1.13)*
O$_3$	1-hr	0.93 (0.73, 1.19)	--
	8-hr	0.93 (0.66, 1.32)	--
	1-day	0.63 (0.25, 1.57)	0.73 (0.37, 1.47)
	2-day	0.69 (0.21, 2.29)	0.79 (0.37, 1.71)
	3-day	0.82 (0.23, 2.97)	1.00 (0.34, 2.99)
	4-day	1.07 (0.29, 4.03)	0.98 (0.32, 2.98)
	5-day	1.52 (0.39, 5.98)	0.90 (0.33, 2.46)
	6-day	1.87 (0.42, 8.25)	0.77 (0.24, 2.46)

[a] For the estimation of odd ratios (OR), pollutant averages include hours before each hourly ECG observation of ST segment depression from the last 1-hour though 6 days (144 hours). For the estimation of rate ratios (RR), pollutant averages include current day 24-hr average plus averages of additional daily 24-hr lags (e.g., 2-day average is the average of current day and lag 1 day averages).

[b] Odds ratios and 95% confidence intervals are for odds of hourly ST segment depression associated with an interquartile range change in the air pollutant over all measurements (Table 2 of manuscript), adjusted for actigraph-derived physical activity for the same hour, temperature of the same lag average, day of week, 6-week seasonal study phase, and community group.

[c] Rate ratios and 95% confidence intervals are for the expected change in daily ST segment depression counts associated with an interquartile range increase in the air pollutant over all measurements (Table 2 of manuscript), adjusted for temperature of the same lag average, day of week, 6-week seasonal study phase, and community group.

* $p < 0.1$, ** $p < 0.05$, [#] $p < 0.01$

Note: The inverse association of daily counts of ST depression with multi-day average (4-day through 6-day) secondary OC was unexpected. We tested two-pollutant models of primary and secondary OC, but found that estimates of associations were minimally changed (not shown), which is not surprising given the two OC fractions were uncorrelated (Table 3 of manuscript).

Supplemental Material, Figure 1.   Rate ratios of ST segment depression ≥1.0 mm in

relation to daily size-fractionated particle exposures.

Rate ratios and 95% confidence intervals are for the expected change in daily ST segment depression counts associated with an interquartile range increase in the air pollutant (Table 2 of manuscript), adjusted for temperature of the same lag average, day of week, seasonal study phase, and community group.